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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,942	03/11/2004	Yang-En Wu	250122-1410	6903

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EXAMINER

CHIEN, LUCY P

ART UNIT PAPER NUMBER

2871

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,942

Applicant(s)

WU ET AL.

Examiner

Lucy P. Chien

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/11/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al (US 6295109) in view of Koyama et al (US 6801283).

Regarding Claim 1 (lines 1-37):

Kubo et al discloses in Figure 3:

A first substrate (1)

A second substrate (2) A liquid crystal layer (5) disposed between the first (1) and second substrates (2).

A first polarization plate (6) arranged on the first substrate (6) and opposite to the liquid crystal layer (5)

A second polarization plate (9) arranged on the second substrate (2) and opposite to the liquid crystal layer (5)

A first half-wavelength ($\lambda/2$) plate (11) arranged between the first polarization plate (6) and the liquid crystal layer (5)

A first quarter wavelength ($\lambda/4$) plate (7) arranged between the first half-wavelength plate (11) and the liquid crystal layer (5)

A first alignment film (Column 30, rows 18-27) arranged between the first quarter wavelength plate (7) and the liquid crystal layer (5)

A second half-wavelength ($\lambda/2$) plate (12) arranged between the second polarization plate (9) and the liquid crystal layer (5)

A second quarter wavelength ($\lambda/4$) plate (10) arranged between the second half-wavelength plate (12) and the liquid crystal layer (5)

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A second alignment film (Column 30, rows 18-27) arranged between the second quarter wavelength plate (10) and the liquid crystal layer (5)

A reflective electrode (3) and a transparent electrode (8) arranged in-plane between the second alignment film (Column 30, rows 18-27) and second substrate (2)

And a backlight (Column 1, rows 26-29) arranged on a surface of the second polarization plate and opposite to the second substrate (2) to complete a LCD structure.

Regarding Claim 1 (line 52-63)

Wherein

Kubo et al also discloses (Shown in Figure 18C and 18D):

An angle between the transmissive axis of the second polarization plate (9) and a retardation axis of the second half-wavelength ($\lambda/2$) plate (12) is 15° from the polarization plate (9), which is between -30° to 20° .

An angle between the retardation axis of the first half-wavelength ($\lambda/2$) plate (11) and a retardation axis of the first quarter wavelength ($\lambda/4$) plate (7) is 45° degrees that is between 30° to 100° .

An angle between the retardation axis of the second half-wavelength ($\lambda/2$) plate (12) and a retardation axis of the second quarter wavelength ($\lambda/4$) plate (10) is 45° , that is between 30° to 80° .

The light entering gets twisted by the liquid crystal then depending on the given angle of the other layers, leaves at a desired angle set by these specific angles as claimed.

Regarding Claim 1 (line 38-41)

Kubo et al does not disclose the twist angle of the liquid crystal is 40-80 degrees and the retardation of the liquid crystal is 200 to 300 nm.

Koyama et al disclose a twist angle of 77 degree, which is in the range of 40-80 degree so the reflectivity is less than 10% with respect to the twist at 70 degrees. (Column 11, Row 42-53) And the retardation of the liquid crystal in the reflective region is 167nm and in the transmissive region it is 288 nm, which is in the range of 200-300 nm as claimed. (Column 14, Row 20-25)

It would have been obvious to one of ordinary skill in the art, at the time of the invention to combine Kubo et al's arranged layers to include Koyama et al's twist angle to lessen the reflectivity. (Column 11, Row 42-53)

Regarding Claim 1 (line 42-51)

In addition to Kubo et al and Koyama et al as disclosed above,

Koyama et al discloses in Figure 2 (Column 14, Row 1-30) the rubbing direction of the first alignment film (21b) and the first polarization plate (which is 100 degrees)(4) The degree as shown is between -20° to 80° . The rubbing direction of the second alignment film (21a) and the second polarization plate (1) is about zero degrees as shown in Figure 2, which is between -20° to 20° . The angle between the first polarization plate (4) and the first half wavelength plate (5) is 68 degrees which is between 60-110 degrees. The angle between the second polarization (1) plate and second half wavelength plate (2) is 11 degrees which is between -30 to 20 degrees.

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Regarding Claim 2: In addition to Kubo et al and Koyama et al as disclosed above, Kubo et al further discloses (Column 28, Row 33-40) A retardation of the first half-wavelength ($\lambda/2$) plates (11) is 270nm that is between 220nm to 280 nm disclosed.

Regarding Claim 3: In addition to Kubo et al and Koyama et al as disclosed above, Kubo et al further discloses (Column 27, rows 54-57) A retardation of the second quarter wavelength ($\lambda/4$) plate (10) is 140nm that is between 110nm to 150nm.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucy Chien
Examiner
Art Unit 2871
LC



DUNG T. NGUYEN
PRIMARY EXAMINER